DOCUMENT RESUME

ED 256 306 IR 011 626

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TITLE Reader Theories, Cognitive Theories and Educational Media Research.
PUB DATE [Jan 85]
NOTE 15p.; Paper presented at the Annual Convention of the Association for Educational Communications and Technology (Anaheim, CA, January 17-23, 1985). For entire proceedings, see IR 011 621.
PUB TYPE Information Analyses (070) -- Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Educational Media; *Epistemology; Learning Processes; *Models; Psychiatry; Psychological Studies; *Reader Response; Reading Processes; *Research Methodology
IDENTIFIERS *Structuralism

ABSTRACT

This paper is the introduction to an inquiry into the relationship of post-structural reader theories to cognitive theories in the study of educational media. Basic concepts in reader and cognitive theories are defined, including the notions of "meaning" and "learners." Similarities and differences in the theories are described. It is suggested that a cognitive paradigm applies psychoanalytic theories to explain learning and brain functions where the brain is considered as a unit, while structural and post-structural theories focus on the viewer as a member of a social group both historically and at a moment in time. Assumptions underlying both of these theories are examined, and implications for handling social and psychological research issues in educational technology are considered. It is suggested that structuralism, which focuses on human acts or behaviors that involve cultural construction in the same way that speech acts involve sentences, provides a framework for organizing and orienting any study concerned with the production and perception of meaning. Thirteen references are listed. (LMM)

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Reader Theories, Cognitive Theories and Educational Media Research

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RTD Presentation
AECT Conference
Anaheim, CA 1985

IR011626

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Reader Theories, Cognitive Theories and Educational Media Research

This paper is the introduction to an inquiry into the relationship of post structural reader theories to cognitive theories in the study of educational media. This inquiry will define some basic concepts in reader (Harari, 1979) and cognitive theories, and describe their similarities and differences. It will recommend application for media research in the separate paradigms from which these theories emerge. My presentation today represents only the first portion of this larger inquiry.

Explanations for learning when instructional media are employed in an educational setting have traditionally drawn upon a behavioral model. Current research and theory in instructional technology indicate the limitations of such a model and the difficulty, in general, of assessing the effects of a medium. Exploration of cognitive theories has recently provided researchers with a more elegant explanation of learning. In fact, the power of these theories to inform the construction of learning models, such as the propositional model, is great and far from exhausted. Cognitive theories, however, assume a psychological explanation for learning which emphasizes individual mental functions and considers the individual as a unit. While this approach is a time honored one and necessary in educational research, there is another approach to learning that is not often employed in this field. That approach is a structural one.

Disciplines, such as biology, zoology, anthropology, sociology and communication arts, to mention a few, inquire about the nature of human behavior. Investigators in these fields employ psychological

and social models for explanations of behavior and a description of interaction. Psychological and social models exist side by side, albeit not always peacefully, within these disciplines. In fact, it is the debate between proponents of these diverse models which helps elaborate the description of human behavior.

An educational investigator working within the psychological model might ask the question, "How does a viewer learn from a presentation?"; while an investigator employing a social model might ask, "How do viewers derive meaning from a presentation?". Yet the latter question does not vitiate the former. They may in fact be considered complementary since educational research deals with social, psychological human beings. The former question constructs the viewer in a psychological form, while the latter constructs the viewer in a social mode. The dichtomy persists even though post structural reader theories appropriate psychoanalytic theories, such as those of Freud and Lacan (Harari, 1974) to partially construct the viewer. The difference resides in the dichitomous application of psychoanalytic theory within the two paradigms. A cognitive paradigm applies these theories to explain learning and brain functions where the brain of the viewer is considered as a unit. Structural and post structural theories, however, focus on the viewer as a member of a social group historically and at a moment in time. These theories appropriate psychoanalysis to partially explain how a viewer creates meaning.

One method of approaching the question, "How does a viewer derive meaning?" is the application of structural analysis.

Loosely conceived, structuralism is a way of thinking about the world which is predominantly concerned with perception and the description of structures. This notion of structuralism, then, would include researchers working in many disciplines under varying paradigms. Piaget, for example, working within the cognitive paradigm would be called a structuralist, since he describes and works with structure. Loosely conceived, a new form of behaviorism, sociobiology, would be considered a structural theory, because its proponents study the social interaction of animals.

More strictly conceived, however, structuralism provides a framework for organizing and orienting any study concerned with the production and perception of meaning. It focuses on those human acts or behaviors that involve cultural construction the way that speech acts involve sentences. It is this notion of structuralism which provides a rich framework within which to examine media viewers and their social knowledge.

It is important, here, to understand some basic concepts of the more narrowly defined structuralism. This theory talks about the concept and perception of meaning rather than the concept of learning. "Meaning", here, is that which one intends to convey by a human act, especially language. "Meaning" may be an act signified by language. In this theory knowledge accrues by perception of meaning, not by information processing, nor the acquisition of a skill, nor the construction of strategies of knowledge. Structurally conceived, the relationship between the observer and the observed becomes primary. Knowledge, here, resides in the relationships which people construct and then perceive.

Semiotic analysis was the first form of structuralism (before Levi Strauss) which offered a model to decode linguistic and media texts. While this analysis focused on the structure of a film or television presentation and the embedding of messages within the form of the medium, it failed to consider the interaction of the viewer with the medium. Employing the same basic structural premises, post structural investigators have suggested models of analyses which include the viewer and his/her perceptions. Such theories are currently called reader theories, theory of the subject, and deconstruction theories. The inclusion of the reader or viewer in the structuralist equation brings the model closer in form to cognitive learning theories.

What, if any, are the similarities between post structural reader theories and cognitive learning theories? Are they only dichotomous? Can they both contribute in a complementary fashion, to the elaboration of our concept of learning and media? I will attempt to partially explore that relationship here. Within the behavioral paradigm, educational researchers were interested in the learner and learning. The learner was defined as someone who responded to a stimulus and who was active. It appears that action within this paradigm simply meant outward motion, because the observation of outward motion was the only way one could evaluate learning or response to a stimulus. Outward motion could include a pencil response to a verbal question. The idea of action, then was simply that it was reaction, not action motivated by intention nor coming from within. Within the behavioral paradigm the learner

was said to learn by engaging in repeated trials of the behavior to be learned, by the application of reinforcement to the practice of the behavior, by the presence of cues and prompts and the fading of such. It is not the purpose of this paper to mount an argument against the behavioral paradigm and the definition of learning or the learner within that paradigm, but simply to evoke the old definitions for purposes of comparison with the new definitions in the cognitive paradigm. As we are now aware, a paradigm shift is occuring within the field of educational technology (Clark and Salomon, 1985) and has occurred within the area of educational research in general. (Wittrock, 1978, Weinstein and Underwood, 1983, and Diekhoff and Diekhoff, 1982). These shifts have also affected instructional design and development (Foshay, 1983, Terrell, 1983) which area, to date, has been articulated with exquisite detail along behavioral lines. Perhaps this articulation is the reason why many academics, unfortunately, do not take instructional development seriously.)

I would like to consider learning and the learner in the cognitive paradigm, so that I may compare these concepts as they appear in the post structural paradigm. Learning is a richer concept within the cognitive paradigm, than it is in the behaviorla paradigm. Learners, Wittrock (1978) indicates are actively engaged in constructing or generating meaning from material. The explanation builds on the behavioral definition of learning. When a learner interprets any stimulus, he/she constructs meaning based upon prior learning. Comprehension is a key concept here and proceeds with

the learner attending to incoming stimuli, accessing existing knowledge to relate to it, abstracting new knowledge structures and finally encoding those into memory. (Rumelhart and Norman, 1978) This learning process results, in some cognitive theories, to ammended knowledge structures which then may be accessed to interpret new information. This is a truly active event for the learner, not just a response to a stimulus. Meaning or understanding is generated by the learner not controlled by the technology or its designer. (It is a while since we have heard the words meaning or understanding, since they had no place in the behavioral paradigm. Yet they are old concepts within gestalt learning theory and meaning is a central concept, as I have noted, in the structuralist paradigm. Meaning in the cognitive and structuralist paradigms differs).

The shift to a focus on the learner and knowledge structures within the cognitive paradigm has vast implications for instructional designers working within that paradigm. Designers will need to become less hardware oriented and less systems dependent or dependent on new systems which they should construct. They need to be "more concerned with how the viewer learns from media. They need to be concerned with facilitating, not controlling learning". (Jonassen, 1984) They will need to focus on learning to learn and it is this which should inform any new designs systems which emerge in the cognitive paradigm. As Winn (1981) so notes, they will need to focus on learning strategies, and expand mental effort to increase the learner's repertoire of mental skills.

It might be helpful to compare the view of the learner in the cognitive paradigm with that of the learner/viewer in the structural paradigm. Within cognitive theories the learner is said to apply learning strategies to the material to be learned. He/she may use procedures to acquire, retain and retrieve different kinds of knowledge and performance (Rigney, 1978). The procedures or competencies might include information processing strategies, such as organizational skills; active study strategies, such as note taking or outlining; support strategies, such as time structuring or relaxation techniques; and metacognitive strategies in which learners become aware of and monitor their learning. (Weinstein and Underwood, 1983).

Post Structural Reader Theories

Learning is never spoken of as such within the structural paradigm and learners are never mentioned. Readers are mentioned, as are viewers, but the concern for the viewers' creation of meaning is common to the two paradigms. As mentioned above, structuralism is concerned with the production and the perception of meaning and meaning is that which one intends to convey by a human act, especially language. Immediately, one can see that this paradigm is concerned with media communication as a social act.

Social issues were crucial research issues within the area of educational technology before World War II. The area, in fact, was called the audiovisual area and the organizational name preceeding AECT was DAVI, the Division of Audio Visual Instruction.

Before 1940 artists, Hollywood filmakers, librarians, educators, educational administrators, mass communication workers and government representatives constituted the membership of DAVI. Varied professionals kept the interests in this field broad, but the broad perspective was lost after WWII in the age of specialization. Within the new instructional technology, participants gained rigor in research and design methods, but lost an interest in social issues. Areas of film and TV studies and mass communication in general did not lose this interest and as we developed rigorous experimental methods for instructional media inquiry, they developed rigor in research of social issues in mass media. I have always thought it strange that instructional technology should consider social issues the domain of mass communications. It was as if educational media were associated only with learning and brain functions. Yet, one may ask if the presentation of three cultures in a new national social studies videotape series called, "Across Cultures," is such, that student viewers may appreciate and vaule each culture. Our normal questions would have centered around the issue of how well can a student learn from this series? The series, however, prejudices the learner in favor of the wealthier culture and tends to denigrate the poverty stricken culture. Evaluators measuring student recall of factual information would not uncover this fact. Yet, we bypass the responsibility of investigating social issues in educational technology, because it does not fall within our research paradigm. And why should it

be left to the sociologists to study the social interaction of children in a classroom in which a videodisc system is present? Are we not the ones who will design much of the educational videodisc programs? It is these types of questions within our field that call for a paradigm based on social communication such as the structural or post structural paradigm. This paradigm would accomodate such questions such as, "How does a teacher decode computer advertisements?" Designers and producers of software should be interested in that issue. Questions of how educational messages are coded and decoded in any medium are of interest to us all.

Structural analysis in film and television studies and mass media have offered us guidelines for the consideration of social issues in educational technology. Within this analysis the relationship between the observer and the observed becomes primary and meaning resides in the relationships which people construct and then perceive.

Semiotocs, which is a system for the study of sign and symbols within any communication system, offers us a theory within the structural paradigm. Methods of observing and decoding may be drawn from the social sciences, if one is to apply semiotic theory. Helpful semiotic studies and observational methods are summarized in another paper (Becker, 1983) and are mentioned here as a base for research which followed. It is that research, post structural study, that is of interest here.

As mentioned above, post structural researchers building on structural concepts, have included the viewer, not just the text or the medium, in their structural equation. Some of these new theories may be called reader theories and are used, not just in literature, but in film and television studies. The difference with these reader theories and what preceeded them is the emphasis on the viewer and his/her construction of meaning. Heretofore, meaning within semiotic study was encoded in the text. Now, meaning does not become meaning until the reader or viewer decodes what has been encoded in the text or film or TV presentation. This is the development that brings post structuralism closer to cognitive theory. Post structurally, meaning can only be understood as what the individual intends. It is, therefore, the individual's intentions which produces the specific relations of differences or similarities, within the structural unit.

How would the learner be perceived in post structural studies? Essentially he/she would be understood as the subject (Coward and Ellis, 1977) of the meaning, since he/she creates meaning from the text or media presentation. How does that understanding differ from the learner in the cognitive paradigm? The difference resides in the fact that post structural study deals, as mentioned above, with social knowledge, so the learner or viewer is constructed as a social person belonging to a group, not as an individual person whose brain is a unit. Investigation of how social groups such as, first graders, female math students or first time compuer users construct knowledge would be conducted. Analysis of how the text

or media presentation is encoded is ignored, but becomes secondary to the questions of decoding by a specific social group. (Culler, 1982) In fact, messages may be so encoded in the presentation that space for certain viewers, such as female math students or first time computer users, is excluded. Yet, these exclusions may not be obvious to the designer. It is the viewer who has to tell us. Psychoanalytic theory (Lacan, L977) can be used to help us understand the viewer and his/her social knowledge.

This portion of the inquiry into the relationship between cognitive theories and reader theories has attempted to describe notions of meaning and the learner within the two paradigms. It has described some of the assumptions underlying both these theories, and suggested implications for handling social and psychological research issues in educational technology. The next section will describe those successful reader theory studies which could be used as guidelines for educational technology research.

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